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Guide to Participatory Environmental Rapid Assessment. Lebanon

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ACKNOWLEDGMENT

Within the framework of the USAID/Lebanon strategy of development to promote economic opportunity in rural areas, the Agency has solicited the help of International Private Voluntary Organizations (PVO partners) to implement the program

To reinforce the sustainability of these efforts, emphasis has been placed on civic participation and strengthening of local governance while focusing on improved environmental practices

To achieve this, GreenCOM, in coordination with the PVO partners, conducted a workshop on Participatory Rapid Assessment with emphasis on environmental issues, problems and practices

Representatives from six PVO partners met in Beirut on Nov 5 to 7, 1997, and prepared a practical guide, Tool-Kit, to be used in the field with the stakeholders in assessing the impact of the proposed projects on the environment

The PVO partners that have participated in this program are the following

YMCA

World Vision

The Pontifical Mission

Mercy Corps International

Creative Associates International Inc

Cooperative Housing Foundation/Cooperative Development

We thank the administration and the staff of USAID, and GreenCom for their efforts to produce this guide, and we hope that the PVO partners, who will oversee long-term reconstruction projects in rural areas, will use it to involve the stakeholders in the development of community directed action plans

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PREPARATION

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INTRODUCTION TO TOOL-KIT

Efforts to assist communities to improve their quality of life through the provision of infrastructure support, often have relatively short time frames, to accommodate the urgency of community needs. Installing feeder roads to enable an agricultural community to get produce to market, installing irrigation systems to improve the productivity for communities whose incomes have been marginal at best, installing sewage systems for people whose health has been at risk are some of the infrastructure development projects that donors and government support. These projects are often relatively confined and small scale, but still carry a potential risk to the environment. One way of assessing the risk is to engage in Participatory Assessment, which uncovers potential problems and allows for program changes to be made with the approval and collaboration of the people for whom the project is intended. In fact, it is the stakeholders who assess the level of risk, assisted by technical experts. This Tool-Kit is the product of an effort in which participatory tools were selected, tested in the field, revised and applied to the concerns of infrastructure development in rural communities. The Tool-Kit provides simple, step-by-step instructions to doing a participatory assessment and can be used by project planners anywhere, to assess environment risk. It is the hope of USAID and its authors, that it will have wide appeal and wide application.

It is from experience of Lebanon that this Tool-Kit was created. The country has faced 18 years of war and a short term of comparative peace. The Government has had to face the problem of a stalled economy and the people, particularly the rural poor, are looking to the Government for economic relief and provision of basic services. The United States Agency for International Development (USAID) supported some of those services, when in 1997 it approved a series of grants to selected, experienced PVOs in the country to furnish the infrastructure that would help alleviate poverty, and improve living standards for the rural poor. In all of its programs however, USAID is concerned that its activities do not, in any way, harm the environment. Large infrastructure projects are required to have Environmental Impact Assessment (EIA), with teams of multi-disciplinary experts examining any aspect of the program that might impact negatively on the environment. EIAs take time. EIAs can take considerable money. In the case of these smaller programs a full EIA often is overkill and puts at risk social and political gains that have been hard won, as well as delaying programs and projects that would certainly improve quality of life for many people who have had the experience of seeing their lives shattered or negatively affected by the war.

USAID looked at Participatory approaches as a way of collecting the information they needed on the potential environmental impact of their program, as a means of educating the community to environmental conditions in their area, and as a method that would accelerate the EIA process

PVOs in Lebanon, while generally familiar with participatory approaches in the social sector, had not used participation as a tool in the technical world that is more frequently inhabited by civil engineers. USAID asked the GreenCOM project to support the effort with technical assistance. GreenCOM is centrally-funded USAID Project that provides technical assistance in environmental education and communication, and which has had considerable experience in the application of participatory techniques to the environment.

The GreenCOM approach is based on a multi-disciplinary approach drawing on lessons learned from the fields of education, psychology and anthropology. It applies these learnings to the field of environmental education. GreenCOM partners in Lebanon were those same PVOs who had been awarded grants and who needed most to learn and apply the participatory methodologies to their work. Consequently, the GreenCOM work began and ended with a Participatory Materials Development workshop in which PVO staff were invited to learn about some of the participatory tools currently in use, examined their own programs for relevance of application of those tools, and then created a framework by which certain tools were selected, and applied to different infrastructure projects. These Tools were tested in the field with four clusters of villages (Approximately 31 villages around the country). An Environmental Assessment of each infrastructure project was prepared with collaboration and partnership of stakeholders. The Tool-Kit itself was refined and left as a legacy for future programs and other agencies working in the area. It has been produced in both Arabic and English to have the widest appeal. The entire process took three months. It is a testament to the formidable power that participatory techniques have, and to the goodwill and sacrifice of the PVO staff and communities.

Participatory approaches have been used in environmental issues before. Both Robert Chambers (University of Sussex) and David Korten (International School of Management at Brattleboro, Vermont), some of the first practitioners of Participatory methodology, have applied the techniques to environmental programs. Lyra Srinivasan of the World Bank also used participatory techniques in establishing the SARAR Project, a water and sanitation project funded by World Bank. In fact many of the techniques used were first elaborated by Srinivasan. Richard Ford and colleagues at Clark University also used Participation in environmental work and produced Tool Kits as well.

The difference in this particular tool kit, is that it is not an open-ended assessment of the environment, in general. Nor is it a social assessment tool which uncovers both relevant technical as well as social impact data. The data that is gathered, the structure of the tools, the formulation of the initial approaches are all intended for the use of the practitioner who is doing infrastructure development. It demystifies both participation and environmental impact assessment for those who have had little experience with either.

It is the hope of the authors that future users will find the Tool-Kit easy to use, as well as stimulating them to new ways of letting people assess risk for themselves. The key to mature communities is both knowledge and self-regulation. As long as knowledge and information are considered the prerogative of the technical experts, communities will remain dependent and external regulation will be the only tool of the practitioner. When knowledge is made available for everyone in a form that all relevant parties can understand, then choices can be made and people can regulate themselves. It is this concept of maturity that is known as "sustainable" in the field of development for which we struggle.

Mona Grieser
GreenCOM

***PARTICIPATORY ENVIRONMENTAL Rapid
ASSESSMENT***

PARTICIPATORY ENVIRONMENTAL RAPID ASSESSMENT

Participatory Environmental Rapid Assessment (PERA) is a promising approach, from the ground up

PERA is research methodology to get practical information on development issues in local communities in order to identify problems, draw action plans, implement, monitor, and evaluate the proposed projects through participation

Characteristic of Participatory Environmental Rapid Assessment

Participatory Environment Rapid Assessment provides an opportunity to

- respect the ability of marginal or disadvantaged groups and benefit from their potential to improve the conditions of their living,
- promote participation between the beneficiaries and the donors in the process of development,
- encourage collaboration among the sectors that work on development,
- promote sustainable development in local communities with safeguards to the environment

ENVIRONMENTAL PROBLEMS

The environment is an integrated system composed of the earth and its resources, such as water, air, soil and living forms human, animal and plant life
Any deterioration in any of these components affects all the other components

Examples of Some Environmental Problems

Environmental problems are evident in deterioration in nature, as in the case with polluted water, the impact of this problem is manifested in appearance of diseases in humans, animals, and plant life

Deterioration caused by a project or some activities, such as constructing a feeder road in an inappropriate locations such as slopes, the impact becomes visible in the form of an increase in soil erosion, clearing of trees holding soils, discontinuity of green cover, endangering wild life, diversion of surface water, increase in potential of pollution, etc

Dealing with any environmental problem , it is important to identify the source of the problem

Prioritization of Environmental Problems

It is necessary to identify the importance of the problem to

The community as a whole, by assessing its impact on the public welfare, community participation, sustainability, equity, cost, time, and technical capabilities

The location or person, by checking its impact on the cost, the private benefit, and the technical skills

Then, it is crucial to determine the acceptable level of vulnerability that could be tolerated, such as the quality and content of potable or irrigation water as reflected in color, taste, and smell, or the loss of certain fraction of forest land, limited grazing, certain number of houses per area, and the length of road network per square area

Sources of Some Environmental Problems

Indicators of Environmental Problems and Measures to Safeguard the Environment

First Water pollution (surface & underground)

1 Surface water pollution is reflected in the following indicators

- a broken pipe indicates leakage which causes water pollution
- any change in smell, taste or color of water
- algae blooms
- diseases in human, animal and plant life
- extinction of life forms

2 Underground water

- excessive water wells reduces underground water
- waste disposal, improper dumps and landfills lead to leakage polluting underground water
- excessive use of fertilizers, herbicides, etc lead to underground pollution that may result in deformities in living forms
- oil spills on the ground penetrate into the subsurface polluting the water

3 Water canals used for different purposes such as irrigation, animal farms, and industry may cause

- reduction of water, surface and underground (when withdrawn from wells)
- pollution of open canals due to natural and man-made causes
- salinization of soil due to excessive use of fertilizer

Measures to be Taken to Reduce the Impact of Some of the Proposed Projects on the Environment.

Project	Features to be Noted	Suggest reduce Damage to Environment
Potable water	Spring and basin located at main road creating safety hazard	It is recommended to Move basin away from road or widen the road as a safety measure
	Spring is open and prone to pollution	Cover the spring to prevent pollution
	Identification of different users of spring water; human, animal and plant	Separate the outlets so that potable water is not polluted
	Groves located above the spring water	Control the kind , quantity and timing of use of insecticides to reduce leachate flow into spring water
	Houses located above the spring water	Exercise caution in building too many houses with cess-pits that lead to seepage of pollutants into spring water
	Presence of aquatic life in the spring water basins	Preserve aquatic life such as eels, frogs, fish, crabs etc Check the feasibility of commercial harvesting
Water canals	Open and prone to blockage by soil, debris and plants	It is recommended to Install a series of filter-barriers along the canals, maintain the system by farmers
	Passing on unstable ground	Build support walls

Passing along supported
terraces

Line the support wall with
impermeable materials to prevent
leakage

Passing through an area
easily prone to flooding

Make sure that the road is drained
through installing drainage canals or
diverting flood water

Salinization due to excessive
fertilizer

Reduce the use of fertilizer and use of
excessive irrigation,

Urban encroachment at the
expense of farmland ,

Exercise self-control in preserving
farmland,
Pressure the government to apply the
laws

Second The Problem of Solid and Liquid Waste

Waste disposal, improper landfills in porous ground lead to

- deformation of the natural surrounding
- producing unpleasant odors
- breeding grounds for rodents and harmful insects
- seepage of pollutants to the soil which pollutes plants forming part of the food chain
- seepage of pollutants to underground water
- non-degradable wastes which find its way into the soil thus endangering animal life

Measures to be Taken to Reduce the Impact of Some of the Proposed Projects on the Environment

Sewage Disposal

Open sewage, and dumping into the valleys,
Distorted landscape
Unpleasant odors
Breeding grounds for pests and harmful insects
Sewage outflow kills some vegetation

It is recommended to
Treat sewage outflow to produce recyclable water, organic fertilizers, and biogas that result from fermentation,

Convey to house wives the significance of reducing the use of detergents that are composed of acidic and alkaline chemicals which inhibit the fermentation process

Solid waste disposal

Solid wastes dumped everywhere

It is recommended to
Separate solid waste into organic and non-organic,

Convert organic waste into
fertilizer for farming,

Location of landfill

Locate the solid waste disposal
away from water courses and sources to
avoid polluting the water, preferably in a
closed area
Terrace the land if site is on slope
to avoid slides down slope

Control landfill lining

Line the site with impermeable materials
to prevent seepage

Control leachates and
control its flow

Secure outlets for leachates and biogas
Provide outlet for generated biogas and
make use of it,

Design the landfill floor at an inclination
towards the mountain to reduce leachates
It is possible to provide a rain cover over
the landfill to reduce leachates

Third Deterioration of agricultural land could be caused by

- 1 Felling of trees, forest fires, overgrazing, improper agricultural practices, excessive use of fertilizers, insecticides etc , and depletion of nutrients in the soil, in addition to climatic changes such as floods, wind and snow storms

These factors have immediate impact on the land in the form of

- soil erosion
- sand movement
- landslides and rock falls, etc
- failure of crops
- soil salinization
- depletion of nutrients in the soil

These same factors lead to desertification in the long run

- 2 Opening feeder roads on slopes causes
 - the removal of trees which holds soil thus causing soil erosion
 - discontinuity in the green cover endangers animal life
 - diverting water courses affect animal and plant life
 - encouraging urban encroachment at the expense of agricultural land

Measures to be Taken to Reduce the Impact of Some of the Proposed Projects on the Environment.

Feeder and access roads	Passing through forest causing its deterioration and endangering wildlife	It is recommended to Divert the road from the forest
	Passing over water canals causing water pollution	Divert the road away from water canals
	Passing across water ways causing pollution	Avoid crossing water ways as much as possible
	Passing along river banks causing ecosystem deterioration	Divert the road away from river banks

Passing along steep slopes
enhancing soil erosion

Construct inclined winding roads
to reduce possibility of soil erosion, in
addition to constructing support walls

Passing through groves and
forest

Construct roads along edges of
groves and forests to reduce

Severe climatic episodes
such as floods, wind and
snow storms, causing land
and soil erosion

Construct drainage canals and
water passes, in addition to
diverting floods to safe areas
Plant a fence of trees to act as a
wind barrier,

Materials used in road
construction come from
quarries causing
environmental problems
such as dust pollution
and landslides

Use local materials and avoid
opening new quarries

Urban encroachment at the
expense of agricultural
land, in addition to use of
natural resources

Exercise self-monitoring to
protect farmland
Pressure the government to apply
the law

Four Food processing plants, depending on quantity, size and location could cause'

- increased demands for water and disposal of waste water
- polluting the soil from oil spills used in generating energy
- polluting the water due to wastewater and oil spills
- polluting air due to burning fuel
- causing noise pollution

Measures to be Taken to Reduce the Impact of Some of the Proposed Projects on the Environment

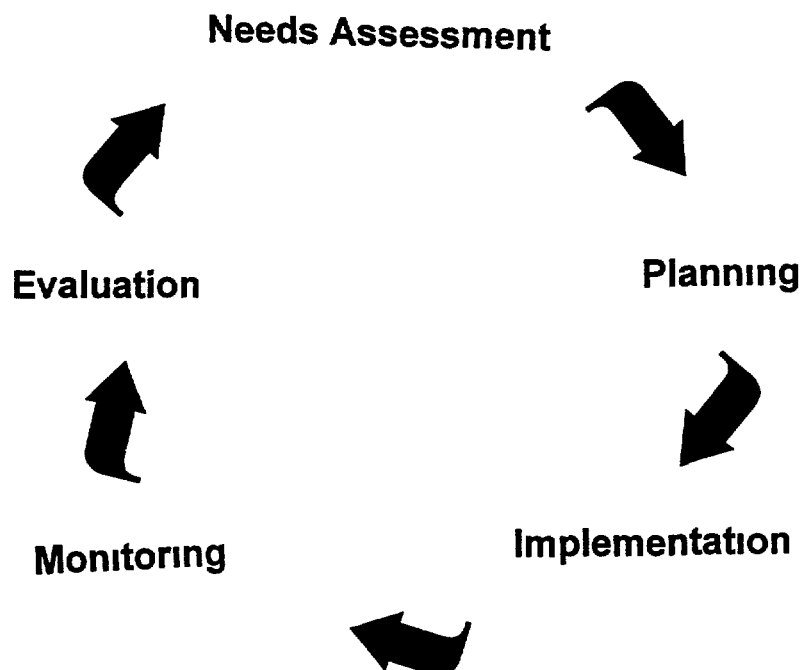
Open of veg Market	Location to highway Location to other villages	secure safety parking and traffic signs
	Disposal of wastewater in cess-pits	It is recommend to recycle water for irrigation locate away from water source line the pit with impermeable materials
Dairy Farm	Location vis-à-vis the houses in the village	It is recommended to Locate the farm away from the inhabitants of the village
	Location vis-à-vis water sources	Locate the farm away from any water source to avoid polluting the water
	Disposal of wastewater	Filter and/or treat the water to reuse it in irrigation
	Disposal of cow dung	Dry the dung in the open for three weeks before using it as fertilizer Treat the dung by bacterial digestion to produce organic fertilizer, biogas and recyclable water, is a preferable measure

	Cleanliness of location and workers	Control cleanliness standards of location and workers for safety control
	Maintain the health of the cows and the safety of the milk	Contract a veterinarian to check the health of the cows and the safety of the milk periodically to maintain health standards
Processing plant consisting of a mill to produce animal feed and food products	Location of plant	It is recommended to Locate the plant away from houses and accessible to the road
	Storage of raw materials	Store the materials in clean aerated storage places
	Source of energy	Provide non polluting source of energy
	Generated waste	Check the kind of waste produced Dispose of waste in an environment friendly manner
	Packaging of products	Package products in bags that are recyclable

Cycle of Participatory Environmental Rapid Assessment (PERA)

PERA can be divided into many stages as shown in the figure below

- 1 Develop a framework for the participatory environmental rapid assessment,
- 2 Prepare a detailed plan for the selected research methods,
- 3 Plan the logistics such as needed tools, transport, lodging etc
- 4 Select and equip a working team,
- 5 Implement the assessment program in the targeted site,
- 6 Analyze the results on site on daily basis,
- 7 Prepare the final report in participation with all the concerned parties,
- 8 Put in place a monitoring system,
- 9 Prepare a plan for evaluation,
- 10 Repeat the cycle



Composition of the PERA Team

The PERA team is composed of

- a group of technical staff knowledgeable in fields related to the needs of the community,
- participants from the targeted community,
- a team leader who is knowledgeable and concerned about the environment

Techniques of Work

In initiating the work, it is important to

- visit the different sites in the village and the surrounding area,
- obtain a historical profile about the village,
- gather information about the socio-economic conditions of the target local community,
- collect information about the local traditions and customs of the target local community,
- select participants from the different groups to represent the local community,
- visit the site and meet members of the community,
- provide an opportunity for people to express their views,
- review all sources of information and check the accuracy of the collected data,
- check accuracy of information by triangulation of different sources, tools and techniques used to gather information,
- ensure the incorporation of the concept of improved environmental practices in all aspects of development

Tools of PERA

In conducting Participatory Rapid Assessment, it is possible to use the suggested tools in different fields of development including health, education, and agriculture etc

This manual specifies the following research tools

- 1 Structured and semi-structured interviews,
- 2 Institutional or Venn Diagram,
- 3 Spatial Data such as sketch maps of site and transect,
- 4 Time-Related Data such as time-line or historical profile, trend lines, and seasonal calendar,
- 5 Matrices
 - a) Pie Chart
 - b) Classification Matrix
 - c) Historical Matrix
 - d) Conflict Matrix
- 1 Ranking
 - f) Preference Ranking
 - g) Pairwise Ranking
- 7 Technical Data

GUIDELINES FOR THE USE OF PERA

Guidelines for Designing Participatory Environmental Rapid Assessment

General Guidelines

- 1 Develop a research plan by focusing on the general and move to the specific
Prepare an outline, and break it into manageable parts,
- 2 When developing a research plan, ask the following questions
 - Who needs the information? and why?
 - What kind of information do we need?
 - How will the results be used?
 - Who will collect the information?
- 3 Think of analysis early on, and use analytical tools throughout PERA,

Guidelines for PERA Fieldwork

- 1 Use the information which was collected about the site in advance,
- 2 Make a clear plan to collect information from the field,
- 3 Verify the accuracy of the gathered information by cross-checking information from different sources,
- 4 Select a team of workers comprising of technical staff and community members who are knowledgeable, experienced, and well-respected in their community,
- 5 Identify a leader for the team and specify his/her responsibilities,
- 6 Mix with the people in the target community and get involved in their work,
- 7 Be self-critical,
- 8 Respect the community members and their knowledge,
- 9 Consider the impact of the following on the environment
 - What are the consequences of certain circumstances and events on the environment?
 - What are the consequences of human behavior on the natural resources?
 - When did the consequences become obvious?
 - Are the consequences affecting the total community? or a certain segment of the community?
 - Are the consequences dangerous and require prompt action, such as limiting, or eliminating the causes

Guidelines for Monitoring and Evaluation

- 1 Make monitoring and evaluation an integral part of the project cycle and its activities,
- 2 Choose a few measurable indicators which would provide you with accurate and reliable data easily and quickly,
- 3 Rely on data which can be collected routinely as part of your regular work,
- 4 Supervise and train community members to do routine data collection and discuss the results regularly,

CHECK LIST

Name of Village		
District		
Region		
Arrival Date	Expected Duration of Field Visit	Actual Duration

Team Members	
1	5
2	6
3	7
4	8
5	9

Technique s	Expected Duration	Actual Duration	Interview with						Remarks
			Business Men	Manual Workers	Farmers	Housewives	Employees	Team Members	
Direct Observation									
Semi- Structured Interviews									
Individual Interviews									
Institutional Diagram									
Seasonal Calendar									
Historical Profile									
Trend lines									
Transect Maps									
Pie chart									
Classificat Matrix									
Historical Matrix									
Conflict Matrix									
Organiz Problems & Opport									
Ranking Problems & Opport									
Resource Assessment									
Evaluation Monitoring & Follow-up									
Other									

	Expected Duration	Actual Duration	Interview with						Remarks
			Business Men	Manual Workers	Farmers	Housewives	Employees	Team Members	
Team Members Assessment									
Identificatio n of Donor- Funded Options									
Option Assessment									
Pairwise Ranking									
Village Action Plan									
Suggestions									

Use the table below to record any required additional information

DATA GATHERING

Direct Observation

Direct observation is systematic observation of objects, events, processes, relationships, or people, and keeping an accurate record of these observations

Objectives

Direct observation is intended to

- focus on a problem such as solid waste disposal,
- identify possible options to solve the problem of solid waste disposal,

Key Issues

Consider some key points in addressing the problem of solid waste disposal

- The number of households in the target area,
- The kinds of solid wastes (Paper, metal, glass, organic)
- The quantity of solid waste produced by each household,
- Ways used to dispose of the solid waste (Burning, landfills)
- Soil composition in the area (sand, clay, etc)
- The location of the sources of water,
- Available land for landfill use

Method

In discussing solid waste disposal with the community, consider the following

Arrange meetings with the local committee to discuss the problem

Include the following members in the local committee

- Staff from the municipality,
- Mokhtar,
- Agricultural Cooperative,
- Clubs
- Welfare Societies
- Religious leaders,

Data Entry

Use the gathered information to fill in the attached form

	# of Household s	quant Of waste per household	Total quant. Of Waste	Method of Waste Disposal	Kind of Waste Org./Inorg	Kind of soil sand/clay	Sources of Water
Name of Village							

Allocated Time 3 hours

SOCIAL DATA

Social data can be collected from three major sources

- Semi-structured interviews with
key informants,
Groups,
Focus Groups
- Farm household interviews,
- Institutional or Venn Diagram

Semi-Structured Interviews

Semi-structured interviews is considered one of the basic tools used in Participatory Environmental Rapid Assessment

Objectives

Semi-structured interviews are intended to

- encourage the local community to articulate and express their needs,
- provide an opportunity for team members to explore possible options with the local community,

Method

In preparing for semi-structured interviews, consider the following

Prepare a list of topics and questions rather than a fixed questionnaire,

Formulate a limited number of questions in advance, and pause other questions during the interview in response to the issues raised by the participants during the discussion,

Interviews with Key Informants

Key informants are people with special knowledge on a particular topic

These include the Mayor, the Mokhtar, Municipality staff, etc

Objectives

Interviews with key informants are intended to

- obtain special knowledge such as the number of households,
- answer questions about the behavior of people and the operations of the broad system,

Semi-Structured Interviews with

1 Groups

Group interviews provide information from a large base of the local community

Objectives

Interviews with groups are intended to

- obtain general community-level information,
- access a large body of knowledge,
- provide a cross-check on information obtained from other sources,

Method

In forming groups for interviews, consider the following

The selection of the group members should come from a cross section of the community,

The number of participants in a group discussion should not exceed 20-25 members,

Discussion should focus on a specific topic such as land use, water sources, etc

2 Focus Groups

Focus group interviews zero in on a topic of interest to the local community

Objectives

Interviews with focus groups are intended to

- discuss a specific topic in detail
- obtain the views of different segments of the community such as housewives, farmers, etc

Method

In forming a focus group, consider the following

The selected group should represent a segment of the community such as housewives, farmers, young women or young men,

The group should be small and members should be interested or concerned about the topic under consideration,

A facilitator should be chosen to ensure that the participants stay on the specified topic, and no participant dominates the discussion

Data Entry

Information is recorded clearly as it is collected

Allocated Time per Interview 1 hour

Individual Interviews with Farm Households

Interviews with individual farm households obtain personal information about the household

Objectives

Individual interviews with farm households are intended to

- obtain representative information,
- cross-check the information obtained from the groups,

Method

In conducting individual interviews with farm households, consider the following

Interviews are conducted with a sample of selected individuals such as representatives of the agricultural cooperative, housewives, etc

Questions should be asked about the individual's knowledge and behavior, and not his opinions about the knowledge and behavior of others

Key Issues

In conducting individual interviews with farm households about solid waste disposal, it is important to consider the following

- The kind of solid waste that the household produces,
- The method used to dispose of the solid waste in the household,
- The place where solid waste is disposed,
- The sources of the water used in the household,
- The source of potable water used in the household,
- The total area of the land that is owned by the household,
- The area of the irrigated farmland owned by the household,
- The area of the arid land owned by the household,

Data Entry

Interview questionnaire should include the following items

Individual Interviews with Farm Households

Name of Village	District	Region
Name of Farmer	Sex	Age
Education		
Number of Children		
Number of Family Members Residing at Home		
Kind of Solid Waste (Glass, paper, organic, etc)		
Ways of disposing of solid waste		
Sources of Water Used for Irrigation		
Sources of Water Used for Drinking		

Data Analysis

Compile the information generated from these interviews, and analyze them to obtain an overview of the problem

Estimate the quantity of solid waste generated in the community, available means of solid waste disposal, and what is needed and required to solve the problem

The Allocated Time 1 hour per household interview

Institutional or Venn Diagram

Institutional or Venn diagram is a pictorial representation that maps out the relationship between key institutions or individuals and community life, and shows their importance in decision making

Objectives

Institutional or Venn diagram is intended to

- provide an overview of the activities of the various key groups and institutions within the local community,
- clarify how the community views these institutions and how they perceive their services to community development,
- assess the relationships among these institutions visually through pictorial representation,

Key Issues

In preparing an institutional or Venn diagram, it is important to identify the relationship between these key players

- Central authorities and the community,
- The role of the central authority in the community,
- The municipality and the community,
- Local community associations and the municipality,
- The kind of services available in the community such as sewage network, garbage collection, etc
- The role of local community associations,

Method

Draw an institutional or Venn diagram as follows

Draw a circle to represent each institution or key individual,

Make size of the circle to represent the importance of each,

Organize the circles so that

- Separate circles represent no contact between these institutions,
- Touching circles represent the flow of information between these institutions,
- Slight overlap represent some cooperation in decision making between these institutions,
- Large overlap represent considerable cooperation decision making between these institutions,

Example

Bkarzala Sewage Treatment Plant

The proposed project in this village is intended to

- treat the sewage to prevent pollution of river and underground water
- protect the farmlands in the valley
- prevent health problems in five villages, lying below the sewage path
- produce organic fertilizers to be used in farming
- recycle the sewage water to be used in irrigation
- produce biogas that is used for energy and may run the pumps
- replace the existing sewage outflow with a public garden

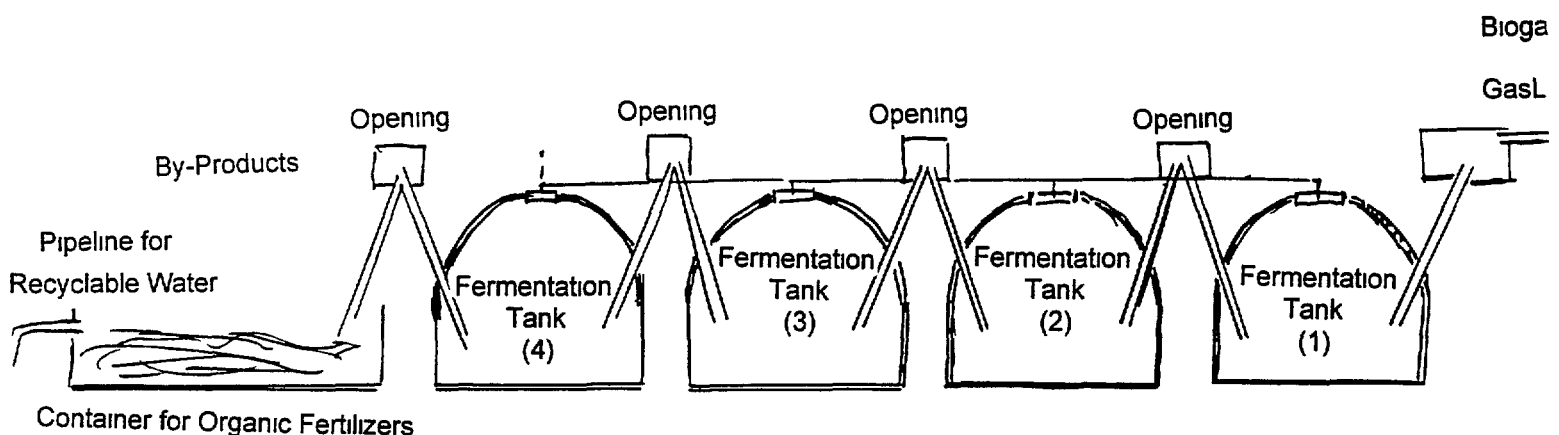
The sewage outflow is a system which serves 70% of the houses of Bkarzla

It is proposed that four large digesting tanks be constructed underground

The sewage is pumped into the series of four tanks where bacterial composting takes place. This process produces biogas, organic fertilizer and water, all of which can be used for different purposes

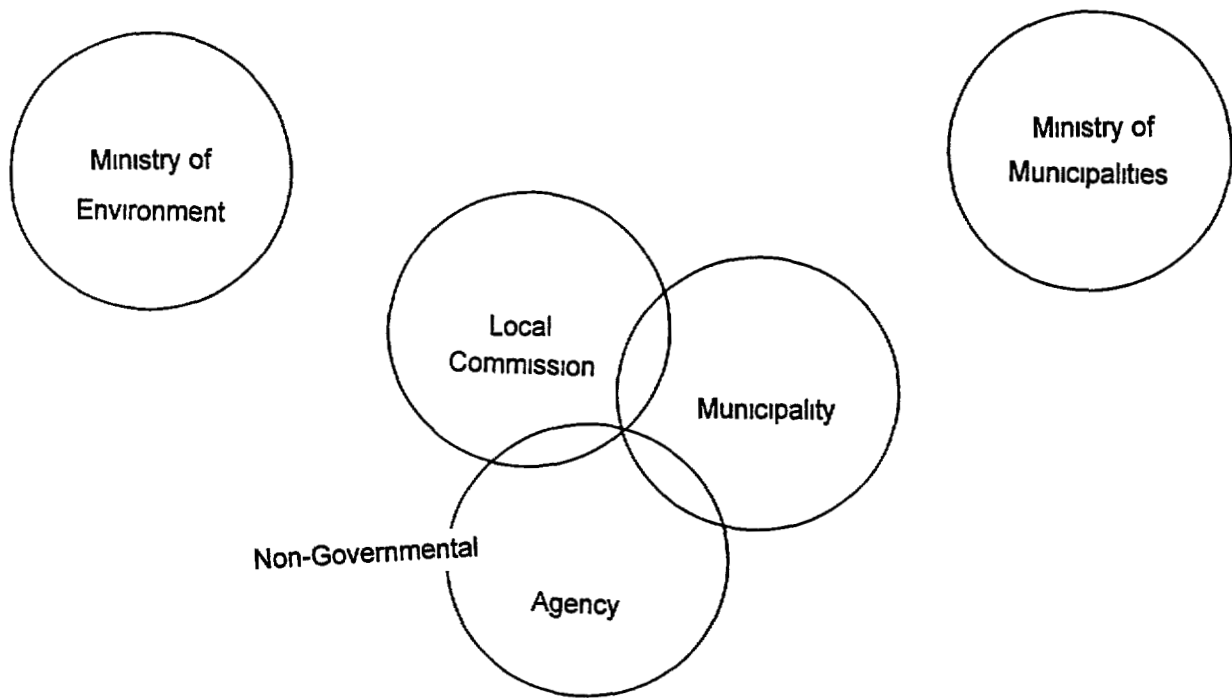
Sewage Outflow Treatment

Fermentation By-Products Recyclable Water, Organic Fertilizers, and Biogas



Allocated Time 2-3 hours

**Institution or Venn Diagram
for
A Water Treatment Plant
in
Bkarzala, Akkar**



SPATIAL DATA

There are two basic spatial data

- Sketch Maps of the Site,
- Transect

Sketch Maps of the Site

A sketch map is a simple model which presents information in an easily understandable visual form

Objectives

A sketch map of the site is intended to

- show a simple visual model of a real situation,
- present a lot of information in a simplified manner, for example the construction of a feeder road, or an irrigation canal or any other project,

Key Issues

In preparing a sketch of the site, it is important to obtain information pertaining to the proposed project the feeder road, by considering the following

- The number people that benefit from the feeder road as compared to the total population of the village,
- The specification of the proposed feeder road
Will it cut across a plain, or a steep slope (causing soil erosion),
Will it pass through a forest (affecting wild life),
- The passage of the feeder road
Will it pass through farmlands, residential area, etc
- The increase in total cultivated land,

Method

In drawing a sketch map of the site consider the following

Confer with different groups in the local community including men, women, farm owners, farm workers, cattle herders, etc

Indicate physical features that might be impacted by the proposed project, such as trees, forests, mountains, water sources, etc

Show residential areas,

Portray economic features such as shopping area, factories etc

Include a key to indicate the symbol for each feature

Data Entry

Drawing a sketch map of the site

Akkar Al-Attika Feeder Road

Akkar Al-Attika is a village in the North about 50 klms from Beirut It has an elevation of 1000 m above sea level

There are about 4000 families that reside in the village all year round, and they rely primarily on agriculture for a living The villagers proposed rehabilitating an already existing feeder road

Data Analysis

In analyzing the data, the result should indicate that

The number of beneficiaries exceeds half the total population of the village,

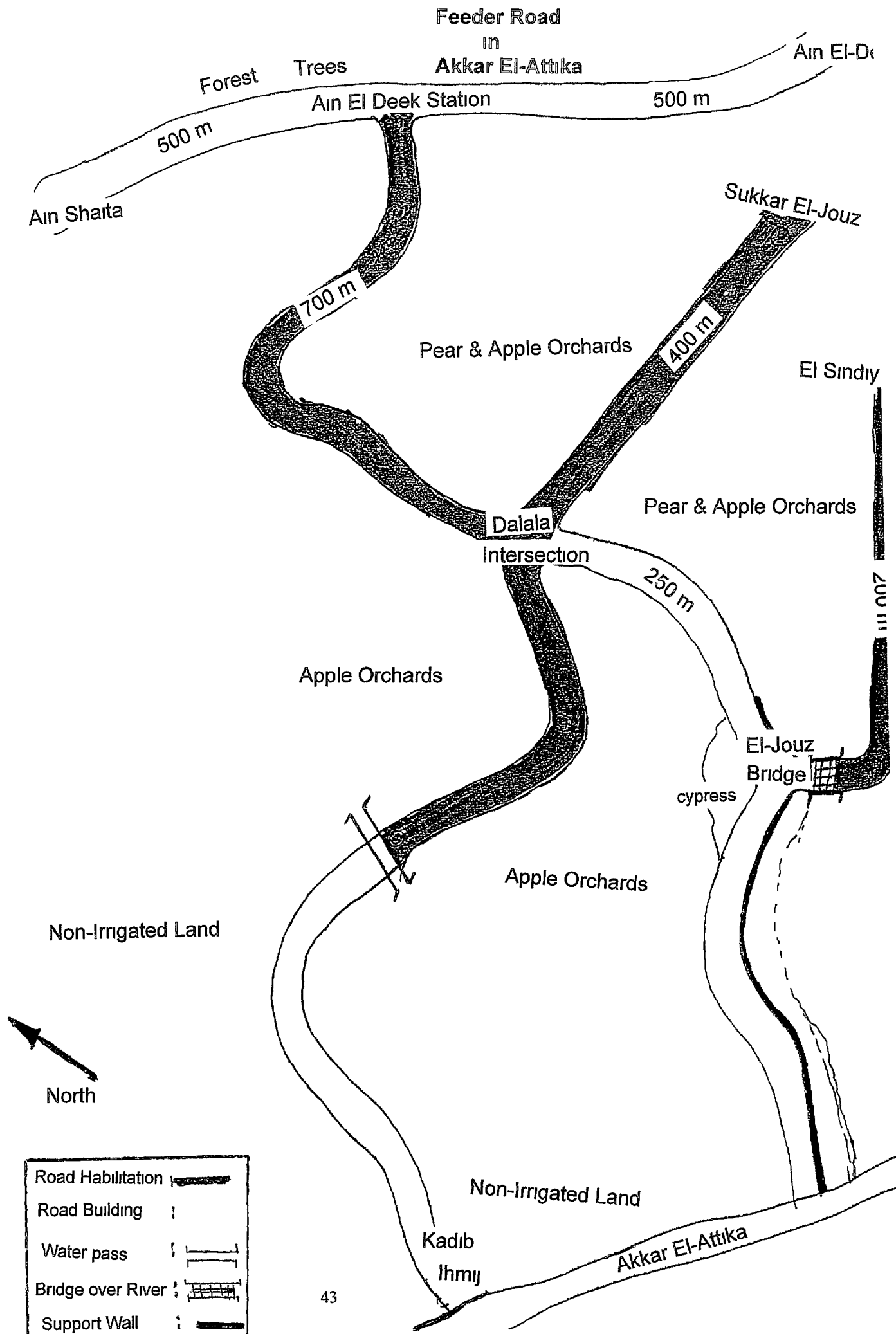
Where the road slopes steeply, the community agrees to wind the road down the slope to reduce soils erosion,

Where the road passes through forest area, the community agrees to change the course of the road so it will not endanger wild life,

Where the road passes through farmlands, the community agrees to build support walls to reduce slumping and soil erosion, and protect the road,

The proportion of increase in the cultivated area far exceeds the land given up to construct the feeder road,

Allocated Time 4 hours



Transect

A transect is a description of a cross-section of the area where the proposed project is planned

Objectives

A transect is intended to

- show land use,
- identify local conditions and the community's possible problems and opportunities,

Key Issues

In drawing a transect, it is important to consider the following

- The kind of soil (sand, or clay)
- Use of the land site on which the project is proposed (farmland, forest, residential)
- The impact of the proposed project on the environment (soil erosion, felling of trees, destruction of walls supporting cultivated terraces)
- Kinds of agricultural produce (fruits, vegetables)
- Kinds of residences (crowded quarters, distant farmhouses)
- Sources of available water in the village (springs, rivers, artesian wells, irrigation canals)

Method

In drawing a transect, consider the following

Walk through the village and the surrounding area with members of the community,

Discuss with them the different factors to be drawn in the transect, (crops, land use, trees, soils, etc)

Discuss possible problems and opportunities,

Identify the main natural and agricultural zones (soils, crops, terraces, etc)

Draw the transect, and cross-check the transect with members of the community,

Example

Wadi El-Sit

The village was evacuated during the war. Some of the houses were destroyed. Originally, there were a hundred families and about 1000 inhabitants that lived in the village.

At present, there are barely 50 inhabitants who live all year round. Mostly they are old retired people.

During the planting season a lot of people return to cultivate their lands.

The villagers have requested the construction of a feeder road that will provide access to many farmlands that are neglected now. They believe that this will encourage the farmers to replant their farms and extend their stay in the village to tend their orchards and groves.

The proposed project for this village is a feeder road that cuts across farmlands and provides access from Wadi El-Sit to Richmaia passing through Schweet and Majd El-Meousch.

The feeder road is intended to

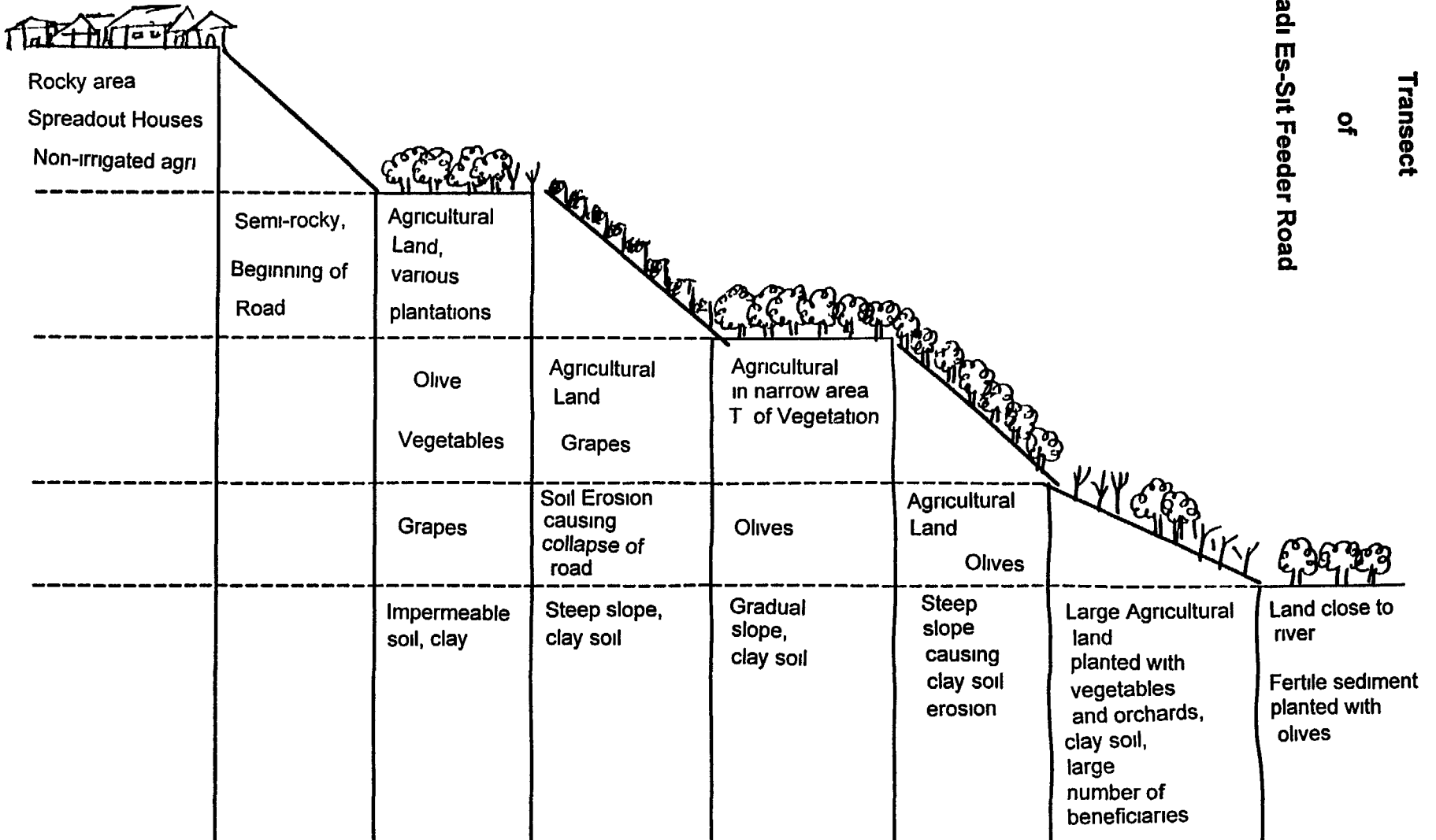
- provide access to neglected farmlands
- revitalize the neglected farmlands
- attract the villagers back to the land

Allocated Time 4 hours

Transect

of

Wadi Es-Sit Feeder Road



Rehabilitation of an Agricultural Road

TIME-RELATED DATA

There are three basic spatial data

- Time-Line or Historical Profile
- Trend Lines
- Seasonal Calendar

Time-Line or Historical Profile

Time-line or historical profile records significant events in the community's past

Objectives

Time-line or historical profile is intended to

- understand what the local community considers to be important events in the community's past,
- gather information from different perspectives and backgrounds including young and old men and women,

Key Issues

In preparing a time-line or a historical profile of a local community, it is important to consider the following

- Significant historical events such as wars, evacuation, etc
- Significant social events such as migration, immigration etc
- Significant natural events such as earthquakes, floods, etc
- Sources of earning a living such as agriculture, employment, etc
- Availability of social, educational and health organizations, etc
- Availability of infrastructure services such as road network, electricity, water, and sewage,
- Degradation of the environment, in the form of air, water, or land pollution, and the impact of that degradation on the local community,

Method

In recording time-lines or historical profiles, consider the following

Record details of influential events that go back as many generations as villagers can recall,

Gather information from other sources such as newspaper, records, reports etc

Data Entry

Record significant events such as

Time-Line or Historical Profile

In _____ The main road was constructed,
In _____ Electricity was brought to the village,
In _____ Potable water reached all the houses in the village,
In _____ A school (Public or private) was established in the village,
In _____ The residents of the village were evacuated,
In _____ The residents returned back to their villages,
In _____ Other significant events,

Example

Abra Access and Feeder Road

Abra had been reduced to rubble during the war. Since the program of returning the displaced villagers to their lands has been initiated, the municipality has been very active to attract back the villagers to their homes. They have reconstructed homes, roads, schools and places of worship. Moreover, they have started a program of social and sectarian integration with the neighboring villages. They have requested feeder roads to reclaim and rehabilitate the surrounding farmlands. World Vision is working with them on a sustainable program which includes, in addition to constructing an access and a feeder road, an education program which prepares school children to assume responsibility for the environment. The program has awareness and training components. World Vision forms a partnership with the villagers and the Municipality, with each partner contributing a certain share in implementing the proposed projects.

The proposed access and feeder road is intended to

- provide access to neighboring villages
- provide access to farmlands that have been neglected
- attract the displaced villagers back to their lands
- reclaim the farmlands
- rehabilitate the agricultural sector

Allocated Time 1 hour

Historical Profile of A'abra, District of Sidon

A'abra Prio to its Inhabitanats' Displacement

- Worship sites, schools, clubs and entertainment facilites
- Coexistence
- Builders, industrual workers and farmers

The War

- Terror
- Displacement
- Aid received from international humanitarian organizations
- Commissions were founded to perform the following tasks
 - Populaation census for the residents of A'abra in their place of location
 - Appointing a delegate for each region
 - Surveying the facilities and contents of A'abra
- Destruction of all municipality's registers and facilities

The Home Return

- Total destruction
- Despair
- Real estates selling
- founding commissions to perform a new survey for the cost of rebuilding for an amount close to 14 million US dollars

Rebuilding

Phase One

- Rehabilitation of cemeteries
- Debris removal
- Road rehabilitation
- Setting borders for roads and neighboring properties
- Completion of a water system
- Completion of an electrical system
- Resolutions to
 - Build a school
 - Establish a health care clinic
 - Plan activities for social integration of the different communities

Phase Two

- Construct low income housing

Phase Three

- Construct private housing

Phase Four

- Establish public facilities a church and a club

Phase Five

- Plan a sewage disposal system
- Set up a system for garbage removal
- Plant trees in the main and internal roads

Trend Lines

Trend lines show patterns of changes over a period of thirty or forty years

Objectives

Trend lines for the feeder roads are developed to

- show quantitative changes over time in resources such as rainfall, soil loss, crop production and marketing etc
- focus the attention of the community on its traditional resource management practices of crop production, transport and marketing,

Key Issues

In developing trend lines for the proposed feeder roads, it is important to consider the following

- Crop production over a certain period of time,
- The anticipated effect of constructing a feeder road on crop production,
- The proportion of increase in cultivated land,
- The proportion of increase in population and the number of farm households,
- The change in transport from using animals to using motorized vehicles and the impact of the change on the environment,

Method

In developing trend lines, consider the following

Obtain information from secondary sources and interviews,

Compare the current information with the information obtained from the past,

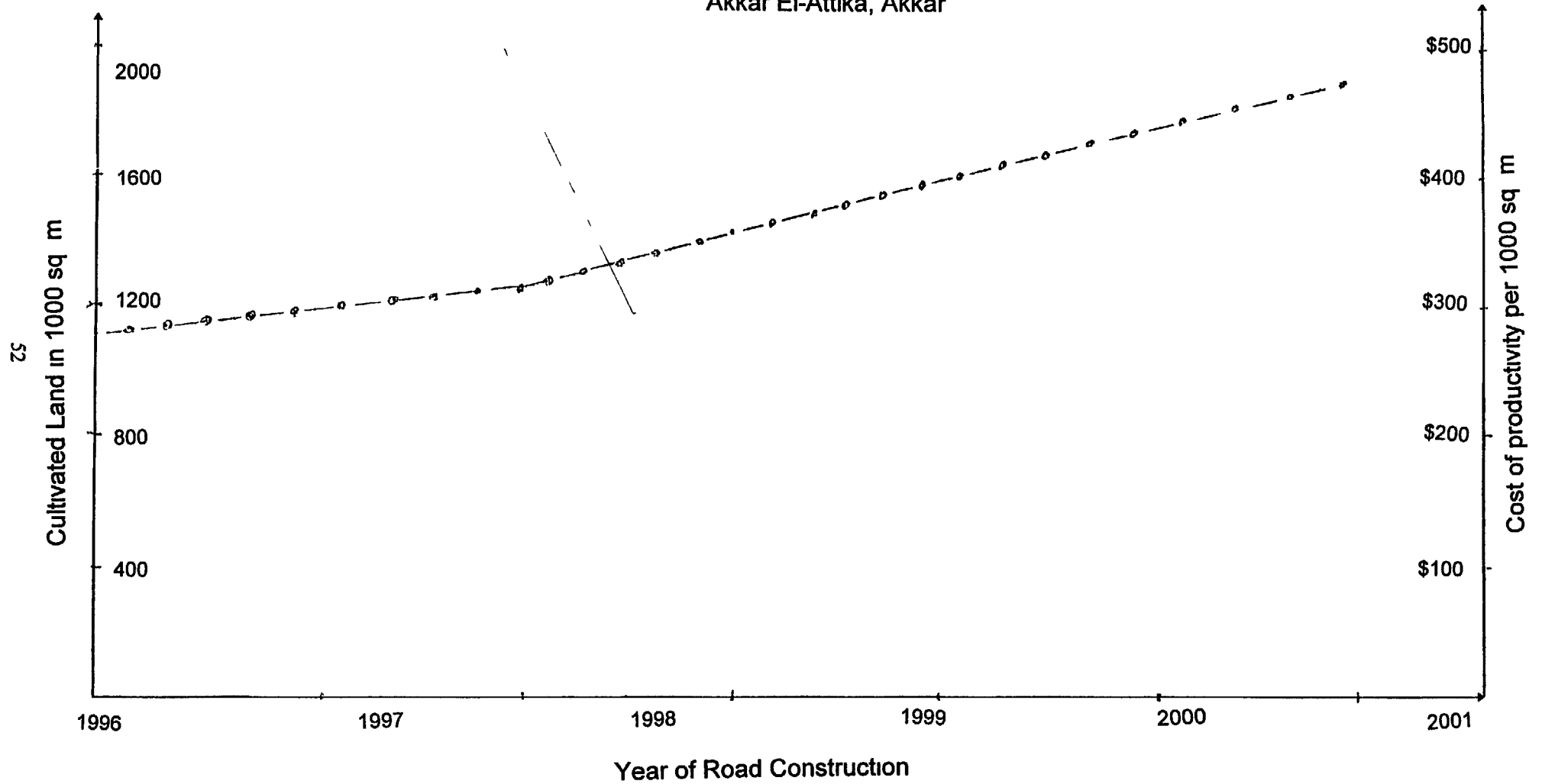
Plot change in trends over the past ten to forty years,

Discuss with members of the local community the pattern of change over time,

Allocated Time 2 hours

Trend Lines

The Impact of Constructing a Feeder Road in 1998
on Productivity and Cost of Cultivated Land
in
Akkar El-Attika, Akkar



Seasonal Calendar

Seasonal calendar identifies cycles of activity that occur within the life of a community on a regular basis over the span of a year

Objectives

Seasonal calendars are intended to

- show the main conditions and activities that change during the different seasons of the year,
- focus on those conditions and activities that may present special problems and require special considerations,

Key Issues

In preparing the seasonal calendars, it is important to consider the following

- The seasonal changes in the area,
- The expected change in weather, temperature, and rainfall or snowfall during the year,
- The time lapse between planting and cultivating the crops,
- The prevalent diseases that attack vegetation and cattle,
- The proportion of men, women, and children that work on the farm,
- The ways used to market the agricultural produce,
- The special conditions and problems that may arise at certain seasons,

Method

In preparing a seasonal calendar, consider the following

Obtain the needed information from village groups,

Collect annual seasonal change patterns,

Identify the conditions and problems that might arise at certain times of the year,

Identify the seasons and the times of planting and cultivating crops,

Check the seasonal calendar with members of the community to determine its validity,

Example

Qubayat Agricultural Market

In Qubayat the number of households engaged in agriculture was estimated at about one third of the resident families

The land suitable for agricultural was estimated at 60% , while 40% is forest land

The agricultural products produced in the area are due to the two major seasons, summer and winter crops The products include cherries, apples, pears, grapes olives, almonds, vegetables, legumes, and wheat

The villagers proposed a Cooperative Agricultural Market to be located on the main road accessible to neighboring villages

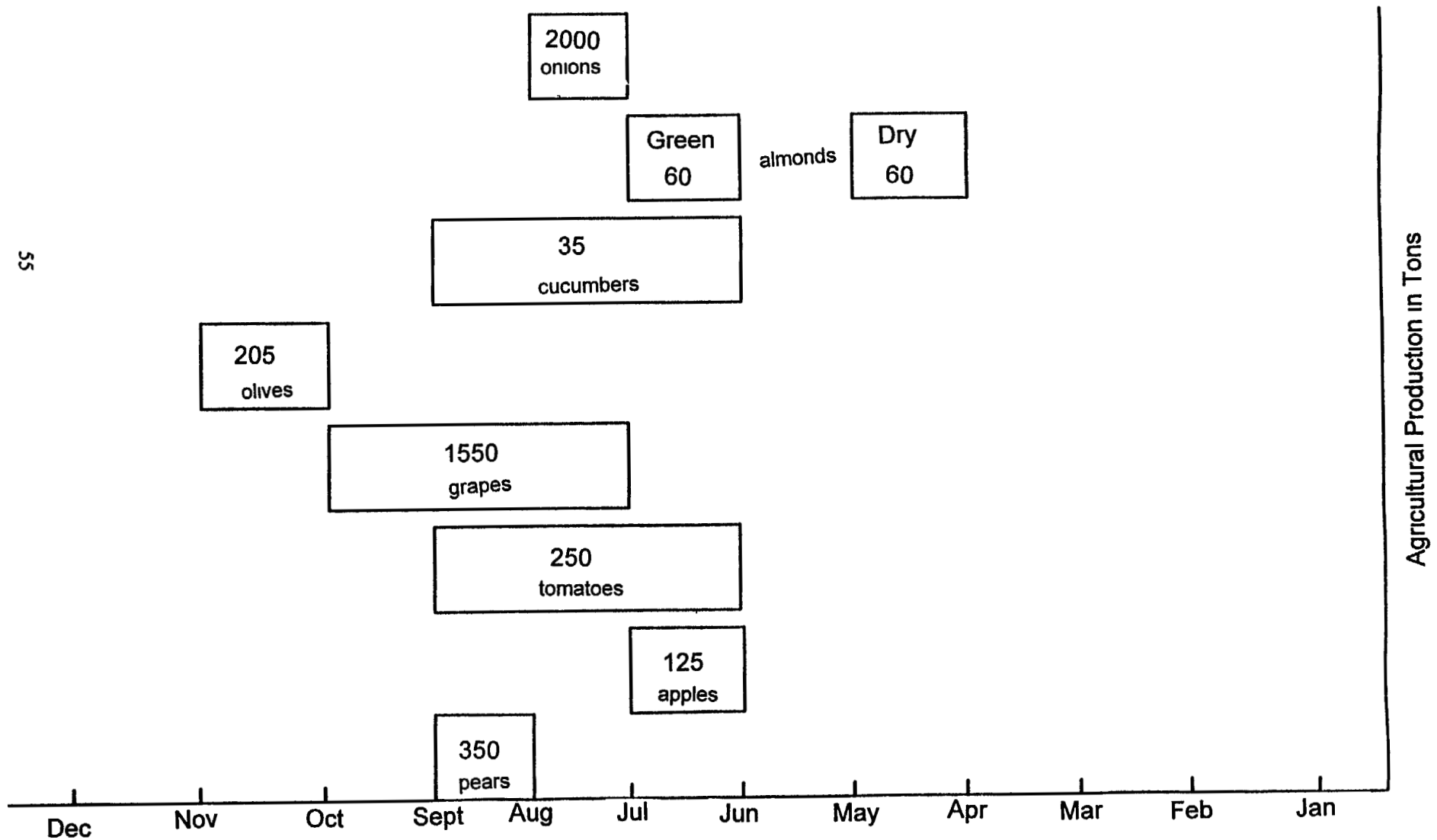
The project is intended to

- market the agricultural produce of the neighboring villages
- strengthen the ties of the local farmers to their lands thus reducing migration to urban areas
- determine whether there is a need for processing excess produce
- monitor and control the kind and use of pesticides

Allocated Time 2 hours

**Agricultural Seasonal Calendar
for
Vegetable Market in El-Qubayat, Akkar**

1996 Agricultural Produce Yields Distributed over a Year



NATURAL RESOURCES USERS' DATA

Natural Resources Users' Data

In collecting data on natural resources users, a number of analytical tools can be used

These tools include

- Pie Chart
- Matrices
 - Classification Matrix
 - Historical Matrix
 - Conflict Matrix
- Ranking
 - Preference Ranking
 - Pairwise Ranking

Pie Chart

Pie chart is a circular area divided into parts representing the percentages of different categories, for example land use is categorized land used for cultivation, land used for grazing cattle, while time is categorized as yearly, seasonal, or daily farm activities

Objectives

A pie chart is a research tool intended to

- record and analyze data in a visual mode,
- explore several areas of inquiry related to a topic under consideration, for example the construction of a feeder road,

Key Issues

In preparing a pie chart about the passage of a feeder road in agricultural land, it is important to consider the following

- The percentage of cultivated land,
- The percentage of uncultivated land,
- The percentage of pasture land,
- The percentage of forest land,
- The percentage of arid land,

Method

In preparing a pie chart, consider the following

Contact at least three residents of the community who are concerned or knowledgeable about land use in the area such as the Head of the Municipality, the Mokhtar, the Sheik of the Village or the Tribe, The President of the Agricultural Cooperative, and other community functionaries such as the headmaster, the doctor, the owners of farm lands, animal farms, or factories

Ask the concerned participant to respond to the following

- 1 The total area of available land for the community,
- 2 The total area of the agricultural land,
- 3 The area of the uncultivated land,
- 4 The number of animal farms located in the area and the area used as pasture land,
- 5 The area of forested land,
- 6 Calculate the percentage of land use for each category,

Example

Harbata Access and Feeder Road

Harbata is a village with about 7000 inhabitants. It lies at the foot of a mountain range that is forested with oak trees.

The villagers utilize wood from the forest for fuel and for making coal.

Their cultivated land is limited to narrow valleys leveled by run-off sediments from the adjacent steep slopes.

The proposed feeder road provides access to public land in the plateau at high elevations that is available for cultivation.

The water sources in the area are scarce. The villagers depend on water harvesting from snow melt to irrigate their fields. They draw potable water from an artesian well at a level of about 450m below ground surface.

The villagers have proposed a feeder road that also serves as an access road from Harbata to A'mer across Haklet Sharaf.

This project is intended to

- provide access to a plateau in the mountains which is public farmlands available for the villagers to utilize
- utilize public land
- cultivate the plateau
- attract the people back to their villages

Data Entry

Draw a circular chart and divide it to represent each calculated percentage.

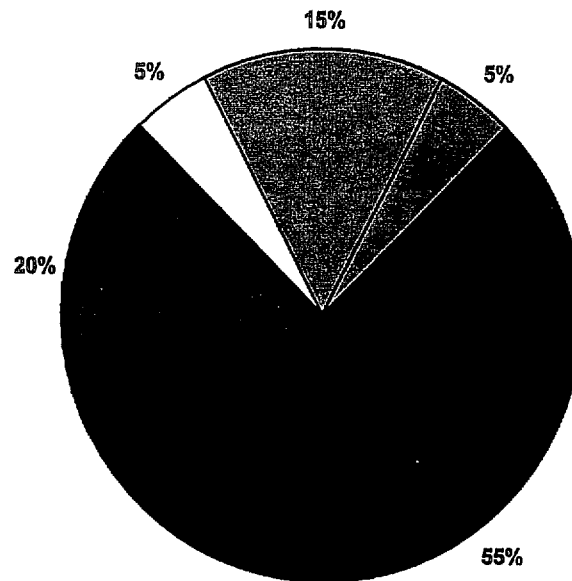
Data Analysis

Analyze the recorded data.

Allocated Time 2 hours

**Pie Chart
of
Harbata Access and Feeder Road**

The Impact of the Proposed Road on Different Areas



Dark Blue (55%) Cultivated Lands that are Inaccessible Without the Proposed Road

Green (20%) Forest Areas that will not be Impacted by the proposed Road

Yellow (5%) Forested Areas that will be Accessed by the Proposed Road to Fight Forest Fires

Light Blue (15%) Pasture Lands that are Inaccessible for Grazing Without the Proposed Road

Purple (5%) Forest Areas that will be Impacted by the Proposed Road

MATRICES

Matrices can be used to explore almost any subject. It is important to think of variables to put on vertical and horizontal axes. The selected variables should be relevant, consistent and easily understood.

This manual discusses three different kinds of matrices:

- Classification Matrix
- Historical Matrix
- Conflict Matrix

Classification Matrix

Classification matrix shows impact of certain development schemes on human as well as natural and environmental conditions.

Objectives

Classification matrix is a simple assessment method intended to:

- clarify the relationship between two variables for example the impact of constructing sewage disposal plants on the environment,
- specify the strongest relationship between different variables for example determining the strongest impact that sewage disposal plants in a certain site, can have on the environment,

Key Issues

In preparing a classification matrix on the impact of certain schemes on human as well as natural and environmental conditions, it is important to consider the following:

- The effect of installing different kinds of sewage disposal plants on the environment,
- The effect of the natural elements on the different kinds of sewage plants,

Method

In preparing a classification matrix for the impact of different kinds of sewage plants on the human as well as natural and environmental conditions, consider the following

Contact at least three residents of the community who are concerned or knowledgeable about sewage disposal in the area such as the Head of the Municipality, the Mokhtar, the Sheik of the Village or the Tribe, etc

Ask the concerned participant to respond to the following

- 1 The effect of installing sewage tanks without impermeable surfaces on life and natural resources such as health, wild life, agriculture, surface and underground water,
- 2 The effect of installing sewage tanks with impermeable surfaces on life and natural resources such as health, wild life, agriculture, surface and underground water,
- 3 The effect of building a network for untreated sewage on life and natural resources such as health, wild life, agriculture, surface and underground water,
- 4 The effect of the building a plant for treating sewage on life and natural resources such as health, wild life, agriculture, surface and underground water,

Indicate the degree of effect by designating

* = slight positive effect

- = slight negative effect

** = positive effect

-- = negative effect

*** = very negative effect

--- = very negative effect

Example

Bkarzala Sewage Treatment

The sewage outflow is a system which serves 70% of the houses of Bkarzla. It is proposed that four large digesting tanks be constructed underground. The sewage is pumped into the series of four tanks where bacterial composting takes place. This process produces biogas, organic fertilizer and water, all of which can be used for different purposes.

The proposed project in this village is sewage treatment, which is intended to

- treat the sewage to prevent pollution of river and underground water
- protect the farmlands in the valley
- prevent health problems in five villages, lying below the sewage path
- produce organic fertilizers to be used in farming
- recycle the sewage water to be used in irrigation
- produce biogas that is used for energy and may run the pumps
- replace the existing sewage outflow with a public garden

Data Entry

Draw a matrix to show, on the vertical axis, the components of the proposed scheme, namely the different kinds of sewage treatment options: sewage tanks without impermeable surfaces, sewage tanks with impermeable surfaces, network of untreated sewage, sewage treatment plant.

Show on the components that might be impacted by these different options on the horizontal axis. These include public health, agriculture, underground water, surface water, and wild life.

Indicate the positive or negative effect by drawing the designated signs given above in each cell.

	Health	Agriculture	Underground Water	Surface Water	Wild Life
Sewage Tanks without impermeable surfaces					
Sewage Tanks with impermeable surfaces					
Network for untreated sewage					
Sewage Treatment Plant					

Data Analysis

Analyze the data by checking the number of signs in each cell and tally the total number drawn across the vertical and horizontal axes

Allocated Time 1 hour

Another Example of a Classification Matrix

A'sal Feeder Road

A'sal is a fairly large town of over 4000 families totaling around 35000 inhabitants. This town has the least percentage of migrants in the area. The basic source of income is agriculture, in addition to trading being close to the borders with Syria. A number of quarries produce stones and aggregates used for construction. The mountain ranges around the village are bare due to deforestation over a long period of time, followed by soil erosion and land degradation. The water sources in the area are scarce although mountain tops are covered with snow during winter. Flash floods are a common occurrence in the area. There are little valleys and depressions that collect the snow forming natural reservoirs.

The villagers proposed constructing a major feeder road that cuts across many orchards within the eastern mountain ranges of Lebanon.

This project is intended to

- provide access to the farmlands
- connect farmlands together for collaboration
- reduce distances between the village and the farmlands
- facilitate transport of produce,
- saves time and energy, and
- benefit all the villagers

Data Entry

Draw a matrix to show, on the horizontal axis, natural and human conditions.

The natural conditions include steep slopes, water passes, weak sedimentary deposits, and pasture land.

The human conditions include orchards, residential areas and access roads.

Show on vertical axis, the available options of the feeder road passage.

namely option one passage, and option two passage.

Indicate the positive or negative effect by drawing the designated signs given above in each cell.

Data Entry

Natural Conditions				Human Conditions			
	Steep Slopes	Water Passes	Weak Sed Deposits	Pasture Land	Orchards	Resid Areas	Access Roads
Passage One	---	---	--	-	-	+	++
Passage Two	--	-	-	++	++	++	+++

Data Analysis

Check the number of signs in each cell and tally the total number drawn across the horizontal axis

Passage One gets 9- and 4+

Passage Two gets 4- and 9+

Passage two is a better choice, since it has a lesser negative impact, and more positive impact and on both the natural and the human conditions

Historical Matrix

Historical matrix is a perspective that provides an overview of certain development schemes and their impact over time

Objectives

Historical matrix is a simple assessment method intended to

- look at how various factors have changed over time
- provide a historical perspective on different variables as they impact each other, for example determining the degree of impact that an irrigation canal can have the area of cultivated land, the residential areas, the beneficiaries, sources of water, and the network of roads over time

Key Issues

In preparing a historical matrix on different variables as they impact each other, such as the effect of constructing a network for an irrigation canal on human and natural conditions over time, it is important to consider the following

- The impact of constructing a network of irrigation canals on the area of cultivated land (before, during and after)
- The impact of constructing a network of irrigation canals on residential areas (before, during and after)
- The impact of constructing a network of irrigation canals on the beneficiaries (before, during and after)
- The impact of constructing a network of irrigation canals on the sources of water (before, during, and after)
- The impact of constructing a network of irrigation canals on the network of roads in the target community (before, during, and after)

Method

In preparing a historical matrix of the impact of a network of irrigation canals on the human as well as natural and environmental conditions over time, consider the following

Contact at least three residents of the community such as the Head of the Municipality, the Mokhtar, the Sheik of the Village or the Tribe, etc

Collect information on the following

- 1 The sources of water,
- 2 The water distribution system in place,
- 3 The area of cultivated land,
- 4 The number of beneficiaries as compared to the total population of the target community,

Indicate the degree of the impact by designating

+ = slight positive effect

_ = slight negative effect

++ = positive effect

-- = negative effect

+++ = great positive effect

--- = great negative effect

Tally the signs in each column and compare positive and negative effect

Example

Chadra Irrigation Canal Network

Chadra has a system of waterways network which was installed in 1964

The irrigation canals sometimes run adjacent to the feeder roads on one or both sides of the road

This system has been neglected, causing plants, sediments, and debris to clog the flow of water. The canals cannot contain torrential rains thus flooding the roads and causing the road deterioration

The network is not lined or covered causing the water to seep through the soil and slows the flow of water

The source of the water going in the network comes from the river

A water distribution regime is agreed upon by the farmers whereby each farmer gets a fixed share per acre over a certain time interval

The proposed development project in Chadra is building irrigation canals to replace the existing old damaged network intended to

- irrigate a large portion of Bka'a plain extending to the Syrian border including Chadra, Machta Hasan and Machta Hammoud
- contain the water which flows over feeder roads
- increase the efficiency in water distribution by cutting down on its time and cost
- benefit an increasing number of farmers, estimated at about 80%
- increase in the productivity estimated at about 30%

Data Entry

Draw a historical matrix to show the effect of constructing a network of irrigation canals on human and natural conditions over time

Show time span on the horizontal axis

This includes before, during and after,

Show categories that are impacted by the change on the vertical axis

These categories include cultivated lands, residential areas, beneficiaries, water sources, and roads

Indicate the impact by drawing the suggested symbols in each cell

	Before Irrig Canal	During Irrig Canal	After Irrig Canal
Cultivated Lands	-	-	+++
Residential Lands	---	---	+++
Beneficiaries	---	++	+++
Water Sources	---	--	+++
Roads	---	--	+++

Data Analysis

Analyze the data by checking the impact on each category and determine the kind of impact specified, and the time indicated

Allocated Time 2 hours

Conflict Matrix

Conflict matrices consist of vertical and horizontal cells that show the various resources on the horizontal axis and the potential disputants along the vertical axis

Objectives

In preparing a conflict matrix on the disputes between the different beneficiaries and the available natural water resources, it is important to consider the following

- The principal beneficiaries of the spring water,
- The principal beneficiaries of the rivulets or rivers,
- The principal beneficiaries of the ponds and dams,
- The principal beneficiaries of the artesian wells,

Method

In preparing a conflict matrix on disputes between the different groups on the benefits derived from a natural resource, consider the following

Contact at least three residents of the community such as the Head of the Municipality, the Mokhtar, the Sheik of the Village or the Tribe, etc

Ask the participants to respond to the following

- 1 Water sources available for domestic use,
- 2 Water sources available for irrigation,
- 3 Water sources available for animal farms,
- 4 Water sources available for fisheries,

Indicate the importance of the water source by designating

*** = Main Source

** = Secondary Source

* = Marginal Source

Data Entry

Draw a matrix to reflect the disputes between the different groups on the benefits derived from the different water sources,

Show sources of water on the horizontal axis

These include water springs, rivulets or rivers, ponds and dams, and artesian wells

Show different groups that benefit from these sources of water on the vertical axis

These categories include village residents, farmers, animal farmers, and fisheries

Indicate the importance of the source by drawing the appropriate symbol in each cell

Example

Disputants	Springs	Rivers	Damps/Ponds	Total
Residents and farmers	***	**	**	7
Residents among each other	*	*	*	3
Residents and Animal Farmers	**	**	**	6
Residents and Fisheries	**	**	*	5
	8	7	6	

Data Entry

Check the source of water that benefit each category and determine the importance of each source for each beneficiary

Data Analysis

Analysis of data indicates that conflict exist between the residents and the farmers over the spring water source

Allocated Time 2 hours

RANKING

Ranking is ordering needs and opportunities according to preference

This manual discusses two methods of ranking

- Preference Ranking
- Pairwise Ranking

Preference Ranking

Preference ranking is ordering problems and opportunities of individual participants according to preference which makes it possible to compare the priorities of different individuals

Voting is a form of preference ranking

Objectives

Preference ranking is a rapid assessment tool intended to

- get at sensitive information that otherwise might be difficult to get at,
- provide relative values, since individuals are more willing to select relative options than provide actual values

Key Issues

In considering preference ranking, for example providing water for beneficiaries, it is important to take into account the following

- The priorities of water use to beneficiaries,
- The sources of water available in the community,
- Sources of potable water,
- Water sources for irrigation purposes,
- Water sources for animal farms,

- Water sources for industrial uses,
- Water sources for wild life,

Method

In using preference ranking, consider the following

Contact at least three residents of the community such as the Head of the Municipality, the Mokhtar, the Sheik of the Village or the Tribe, etc

Ask the participants to respond to the following

- 1 The source of potable water,
- 2 The source of water for domestic use,
- 3 The source of water for irrigation,
- 4 The source of water for animal farms,
- 5 The source of water used in industry,
- 6 The source of water for wild life,

Rank the importance of the source of water to the users by ordering it from 1-5

Data Entry

Enter the data in a matrix to reflect the importance of each source of water for each category of users

Show sources of water on the horizontal axis

These include water springs, rivulets or rivers, harvesting of rain water, dams/ponds and artesian wells

Show different users that benefit from these sources of water on the vertical axis

These categories include village residents, farm land, animal farm, factories, and wild life

Example

Sources/ Beneficiaries	Spring Water	River	Rain Water	Dams/Ponds	Artesian Wells
Residents	5	1	4	3	5
Animal Farms	2	3	3	3	1
Cultivated land	5	1	5	3	3
Industries	1	1	1	2	1
Wild Life	2	1	2	1	1
Total	15	7	15	12	11

Data Analysis

Analyze the data by checking the source of water that benefit each category and determine the importance of each source for each beneficiary

Allocated Time 2 hours

Pairwise Ranking

Pairwise ranking is a tool used to determine the main problems and opportunities of the participants, and to identify their ranking criteria

Objectives

Pairwise ranking is an assessment technique intended to

- order the problems and opportunities according to priority,
- identify their ranking criteria,
- make it easy to compare the priorities of different individuals,

Method

In using pairwise ranking, consider the following

Contact at least three residents of the community such as the Head of the Municipality, the Mokhtar, the Sheik of the Village or the Tribe, etc

Ask the participants to identify the priorities for providing water for community use by responding to the following

- 1 In your opinion what is more important digging out water or treating water?
- 2 In your opinion what is more important digging out water or distributing water?
- 3 In your opinion what is more important digging out water or recycling water?
- 4 In your opinion what is more important digging out water or reserving water?
- 5 In your opinion what is more important treating water or distributing water?
- 6 In your opinion what is more important treating water or recycling water?
- 7 In your opinion what is more important treating water or reserving water?
- 8 In your opinion what is more important recycling water or reserving water?

Record the responses of the participants and rank them in descending order, so that each category has a numerical number indicating the number of times it was selected as a priority

Data Entry

The gathered data should reflect the number of times each category has been selected as a priority

Enter the collected data in a matrix to reflect the preference of each category in a descending order on a vertical and horizontal axes

Example

Problems/ Opport	Digging out Water	Treating Water	Distributing Water	Recycling Water	Reserving Water
Digging out Water	Digging out Water	Digging out Water	Digging out Water	Digging out Water	Digging out Water
Treating Water		Treating Water	Distributing Water	Treating Water	Reserving Water
Distributing Water			Distributing Water	Distributing Water	Distributing Water
Recycling Water				Recycling Water	Reserving Water
Reserving Water					Reserving Water

Data Analysis

Analyze the data by checking the tabulated categories according to the preference of the individual participants

Problems/Opportunities	Number of Occurrence	Rank
Digging out Water	5	1
Distributing Water	4	2
Reserving Water	3	3
Treating Water	2	4
Recycling Water	1	5

Allocated Time 2 hours

TECHNICAL DATA

It is useful to prepare technical surveys before villagers meet to discuss and rank their activities in a formal order

Objectives

The technical data is intended to

- be used to enhance discussions at the ranking meetings,
- make the village ranking meeting more effective,

Method

When villagers meet to organize their problems and opportunities, should a sector emerge as an area of concern, consider the following

Schedule technical feasibility studies before the village meeting ranks projects

Assign officers on site to carry out the technical work

Collect technical data according to the scope of the proposed plan

Carry out a feasibility review after village meeting has ranked projects

Base the deliberations for priority rankings on issues of sustainability, equity and technical data collected

Data Entry

Prepare a matrix and enter the technical survey data collected, as shown in the table below

Area	Natural Features	Opportunity for Development
District 1		
El-Rasif	Dry	Cultivation of Grapes
Ain El-Ghizlan	Seasonal Changes	Cultivation of Fruit Trees
District 2		
El-Mintarah	Dry	Rehabilitating the water network Cultivation of Olives Grapes, and Figs
El-Heffat	Seasonal Changes	Irrigation Canals Olive Trees
Jal El-Deep	Seasonal Changes Spring	Constructing Feeder Road and Irrigation Canals Pine Trees and Fruit trees

Data Analysis

Collect technical data on the availability of water in the area

Ain El-Ghizlan

Possible Option

Water source is located outside the village, and installing pipes to carry water into the area will

- be costly due to the installation of pipes and construction of water network
- cause disputes among the different villages,

Alternative Option

Since installing irrigation canals is not a feasible option, the villagers might consider cultivating rain fed crops that rely on seasonal rain for irrigation

This alternative option will

- rehabilitate agricultural land,
- is less costly,
- does not require any water treatment since water is not available,
- does not require administrative services

Allocated Time 2 hours

Organization of Problems and Available Opportunities

Objectives

Organize the available data in a simple structure that enables their assessment and tabulation by the local community

The Required Data

- Take into consideration the issues that have a bearing upon the community 's quality of life, through revising and discussing all the data collected by the team members, to ensure their full understanding of the environmental problems and their solutions
- List the development-environmental problems, their impacts and the alternatives that deal with each of them
- Include the possibilities set by the community and its authorities, in addition to the suggestions of the technical team, provided they are well defined and precise
- Assess the alternatives in a ranking table or any other form that facilitates their discussion with the stakeholders, and leave a margin for their comments and modifications

Organization of the Data

Information collected from the data in the field should be organized by a group consisting of participatory environmental rapid assessment (PERA) work team, some community leaders, experts and technical people, and the local committee participants

Method

The work team sets a draft stating the basic environmental problems as defined in previous phases and compares the problems with the available opportunities

In the initial stage, the data should be organized regardless of the priorities
Priorities will be set later by the local community

There is no one set formula for listing the problems and proposed solutions. In most cases each topic is considered by itself: soil erosion, water availability, diseases, reduction in crops, etc.

Possible solutions for problems are to be listed repeatedly with each problem.

Example

Disposal of Waste Water Project

Problems	Solutions and Available Opportunities
<p>Health</p> <p>spread out of contagious diseases</p> <p>pollution of drinking water</p> <p>Agricultural</p> <p>pollution of irrigation water</p> <p>growth of unwanted plants or weeds</p> <p>increased salinization</p> <p>Miscellaneous</p> <p>bad odors, negative impact on tourism, extinction of life in natural water, pollution of sea water and the elimination of marine fisheries</p>	<p>1 Launch education and awareness campaigns</p> <p>2 Establish infirmaries and distributing medicine</p> <p>3 Set up sanitary networks for waste water drainage and treatment for reuse in irrigation</p>

Ranking of Problems and Alternatives

The main step, after stating the problems and the proposed solutions, is ranking the opportunities according to priorities

The local community leaders, regional development societies and representatives of the main agencies can join the technical supervisors and permanent organizations in the discussion and agreement on the priorities

The process of ranking problems and solutions according to priorities achieves an important goal which is alerting the community to a source of information relevant to their needs. This process increases their knowledge of the management of the local natural resources and augments their interest in participation and contribution

On the other hand, it provides technical information on problems, balances regional financial considerations, and increases their conviction that appropriate resource management can be done through local initiative

Objectives

Obtain technical and social feasibility for each problem under consideration,

Arrange the developmental problems and their environmental impacts according to priorities,

Take into consideration financial, and labor resources, as well as acceptance by the local community

Assess external influential factors such as environmental sustainability, stability, equity, cost-productivity ratio,

Note the potentials of the local community for each available opportunity,

Plan the management of local resources

Participants

The extended local meeting provides the basis for defining the problems and opportunities, and ranking the most important and possible solutions. It should be attended by the PERA team, technical supervisors, local leaders and community members

Method

The ranking procedure is done in a variety of ways (Preference ranking, pairwise ranking, open discussion and voting)

In ranking the following should be taken into consideration

- 1 Schedule a whole-day meeting of the representatives of the local community, guests and leaders,
- 2 Review the procedures used in collecting data,
- 3 Discuss and present a time-table,
- 4 Present the problems and the alternatives prepared by the PERA team,
- 5 Review the available data with the community for further discussion of the issues
- 6 Clarify the criteria for ranking the priorities
- 7 Prepare a summary of the most important local problems
- 8 List 3 to 5 major problems,
- 9 Rank the alternatives for each problem according to priorities
- 10 Discuss the criteria for ranking with the group,
- 11 Involve the local community in modifying the criteria,
- 12 Note that the for problem ranking may differ from those for ranking solutions
- 13 Explain these issues to the community in a simple and clear manner,
- 14 Review the initial ranking of alternatives with the community,
- 15 Give the community an opportunity for modifying these suggestions,
- 16 Make sure that the results of the ranking of activities are compatible with the local conditions
- 17 Adopt a method for ranking Ranking could be
 - Pair wise ranking
 - Preference ranking (Example is attached)
 - Voting can either be public (raising hands) or private (secret ballot)
Participants can assign their favored item in order of priority with the highest score being the most important

Preference Ranking

The Best Project	Productivity	Stability	Sustainability	Equality	Duration	Cost	Feasibility	Priority
Establishing Infirmaries	1	1	1	1	2	2	2	6
Setting up a sanitary network that empties in a valley or river	-2	2	-2	1	1	3	1	5
Setting up a sanitary network in the nearest reservoir for treatment and reuse	2	2	2	2	3	1	3	7
Setting up sanitary holes for each house with a concrete bottom for treatment and reuse of domestic water	2	2	2	2	3	1	3	7

1 = slight positive impact
 2 = positive impact
 3 = very positive impact

-1 = slight negative impact
 -2 = negative impact
 -3 = very negative impact

A Plan for Management of Community Resources

Objectives

The main objectives in the planning include

Setting up a plan for managing common resources that is not in conflict with environmental concerns

Recording all developmental possibilities, and their environmental impacts in this local community

Facilitating adopting by both the donor and implementing organizations environmental priorities and objectives in their programs

Contents of the Plan

The plan should include a record of

- the developmental priority projects as set by the local community,
- practical suggestions and requirements for the implementation of these projects,
- the rights and responsibilities of individuals and groups,
- a defined time table for project implementation,
- the localities and the projects that need external help,

Participants

- The local community plays the initiative role in setting and developing community resources management plan. The work team and technical supervisors' role is limited to that of facilitating and supplying the local community with technical and scientific information to implement the program
- NGOs and donor agencies participate in setting up this plan because factors like availability of required funds, technical support and training are essential for the success of the plan

Method for Plan Setting

The leader of the work team

- 1 Explains the importance of tabulating the set of priorities,
- 2 Clarifies the ranking criteria used in selecting those priorities,
- 3 Discusses with the community procedures to implement the program,
- 4 Provides an opportunity for the technical experts (such as the civil engineer, the agricultural or water or health expert) to present their recommendations concerning cost estimations, materials to be used and its availability,
- 5 Facilitates the discussion of the local community members in evaluating the available local resources and labor that could be mobilized in the community to implement the project,
- 6 Helps the participants to reach decisions democratically by voting,
- 7 Assigns, for each project (e g setting a sanitary network), basic tasks to definite people or organizations, like a civil engineer, local committee representing the community, a non-profit organization NGO or municipality, etc
- 8 Links a schedule of implementation with time to help the community to assess performance at each stage,
- 9 Extends help to the community in such areas as expertise, training, and financing,
- 10 Appoints a person in charge of follow-up for provision and coordination of those needs
- 11 Lists possible resources that the community can utilize in implementing their program such as non-profit international agencies, sectarian organizations, etc
- 12 Delegated the responsibility to the local community They should have the upper hand in all activities including planning, and implementing to ensure proper and sustainable local management

Assessment, Monitoring and Follow-up

The community planning committee and the PERA team are charge of setting up the plans, implementing the decisions, managing the available resources, and supervising the implementation of the program

The committee might need some temporary or permanent supervisory staff

The PERA team should take into consideration the importance of this committee

Monitoring and supervision is a very critical in implementing any program The supervisor might be a farm owner, a cooperative manager, a clergyman, or a member of a political group, etc

The supervisor organizes and follows-up the work, his responsibilities include

- obtaining the needed data,
- coordinating the activities with authorities,
- interacting with the local and regional authorities,

The committee stays in contact with the project administrators, keeps them informed about the progress of the work, and gets their support when needed

Different committees should be appointed to facilitate the implementation of the program These committees would include

- The local resources management committee,
- Project follow-up and supervision committee,
- Environmental and multi-faceted development committee,
- Administrative committee that works closely with the supervisor,
- Financial committee in charge of receiving and disbursing funds,
- Technical committee comprising of leaders and members of local organizations who get special training in resource management

PERA utilizes basic techniques for data collection, where local people participate in project planning Implementing this, results in proper planning and management of community resource, enhances the development of local efforts in benefiting from natural resources, and revives hopes for a better future

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